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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/432,112	11/02/1999	TAKASHI TSUDA	837.1212/JDH	9637

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EXAMINER

JUBA JR, JOHN

ART UNIT PAPER NUMBER

2872

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. <u>W</u> 09/432,112	Applicant(s) TSUDA ET AL.	
	Examiner John Juba, Jr.	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 19, 2004 has been entered.

### ***Claim Objections***

Claims 1 – 3 and 15 are objected to because of the following informalities. Appropriate correction is required:

In claim 1 (lines 12 & 14), "said optical fiber type" should read "the optical fiber type", since no particular fiber type has been identified.

In claim 1 (lines 13 & 14), "said optical fiber transmission line" should read "the optical fiber transmission line *segment*", or similarly. Since the transmitter and receiver do not have segments *both* upstream and downstream, the claims have been construed as referring to any segment immediately upstream and any segment immediately downstream, or equivalently, to the segment immediately upstream (if any) and the segment immediately downstream (if any).

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In claim 1 (line 14), "said dispersion value" should read "a dispersion value" since reference (in this case) is not made to the dispersion value of the upstream transmission line previously recited.

Claims 2 and 3 are objected to as inheriting the aforementioned informalities through their dependency from claim 1.

In claim 15, line 11, "in associate with" should read "in association with".

In claim 15 (lines 12 & 13), "said optical fiber type" should read "the optical fiber type", since no particular fiber type has been identified.

In claim 15 (lines 13 & 14), "said optical fiber transmission line" should read "the optical fiber transmission line *segment*", or similarly. Again, the claims have been construed as referring to the segment if it is present, rather than as requiring the presence of both upstream and downstream segments in all cases.

In claim 15 (line 14), "said dispersion value" should read "a dispersion value" since reference (in this case) is not made to the dispersion value of the upstream transmission line previously recited.

### ***Claim Rejections - 35 USC § 112***

Claims 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is confusing or incorrect in reciting a "dispersion *compensation* fiber type having a zero-dispersion wavelength of about 1.55  $\mu\text{m}$ " [emphasis added]. In light of

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the present specification, one of ordinary skill would regard the fiber having a zero-dispersion wavelength of about 1.55  $\mu\text{m}$  to be "dispersion-shifted fiber" type having no dispersion or very low dispersion (in the case of a "non-zero dispersion shifted" fiber type). As such, the recited fiber type would *not* be regarded as a "dispersion compensation fiber type", since dispersion compensating fibers are of relatively *high* dispersion at the operating wavelength. It is believed that the instant specification draws a distinction between dispersion compensating fibers and dispersion shifted fibers. Thus, it is believed to be incorrect to identify a dispersion-shifted fiber as a dispersion compensation fiber, as recited.

Claim 3 inherits the same defect through its dependency from claim 2 and is further confusing in referring to the connection of a "dispersion compensation fiber type" as determining whether or not a dispersion compensator is included. When read in light of the specification (pp. 21-23), it is the presence of a "dispersion shifted fiber" type that determines whether or not a dispersion compensator is included.

These claims have been construed in light of the specification as referring to a dispersion-shifted fiber (DSF).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 1 – 3 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by N. Henmi, et al., (*IEEE Photonics Techn. Lett.*). Referring to “Case 3” and the associated text (first whole paragraph on Pg. 1340), Henmi, et al disclose a system for optical transmission adopting dispersion compensation, comprising an optical fiber transmission line composed of a plurality of segments each having a length falling within a “predetermined” range, said plurality of segments including a plurality of fiber types (“DSF” and “normal”); an optical transmitter (TX); an optical receiver (RX); and an optical amplifier (e.g., 2) between two adjacent segments. Admittedly, there are no dispersion compensators of the type recited, but the claims have been construed as not requiring even “at least one” dispersion compensator (being provided).

When read in light of the specification, and as is clear from Applicants’ remarks and the claim construction, a dispersion compensator “in association with” a functional block is connected at the location of, or adjacent the functional block. By way of contrasting example, a dispersion compensator “associated with” the optical transmitter is not “associated with” the optical receiver simply by virtue of being in the transmission system. Thus, the recitation of a “dispersion compensator in association with *each* of said optical transmitter, said optical receiver, and said optical amplifier” [emphasis added] refers to dispersion compensators associated with each of the functional blocks individually. However, it is clear from Applicants’ claim construction that the recitation

“according to said optical fiber type and a dispersion value of said optical fiber transmission line immediately upstream thereof, and said optical fiber type and said dispersion value of said optical fiber transmission line immediately downstream thereof”

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means that, depending on the fiber type and dispersion value upstream of the functional block, and depending on the fiber type and dispersion value downstream of the functional block, a dispersion compensator may or may not be associated with the functional block.

Returning to Henmi, et al the segment types immediately upstream and downstream are selected such that the dispersion is substantially compensated. Thus, *in accordance with* the dispersion values and fiber segment types, no dispersion compensator is associated with any of the transmitter, receiver, or amplifier.

With regard to claim 2, Henmi, et al disclose fiber with its zero dispersion wavelength shifted to 1.5  $\mu\text{m}$ , and “normal” fiber with a 1.3  $\mu\text{m}$  zero dispersion wavelength. It is believed that, given the “18 ps/km/nm” dispersion reported for the 1.3  $\mu\text{m}$  zero dispersion fiber, one of ordinary skill would at once envisage a “single mode” fiber, as recited.

With regard to claim 3, the fiber segment immediately downstream of the transmitter is the dispersion-shifted fiber, and a dispersion compensator is not associated with the transmitter. There is no case where the optical fiber transmission line (segment) immediately upstream of the optical amplifier is the dispersion compensation type, and the presence or absence of a dispersion compensator is immaterial. That is, the recitation is in the form of a conditional statement (if... then...) where the condition does not apply. There is no recitation of what happens if the segment is *not* a dispersion shifted fiber type.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

FUJITSU Ltd (U.S. Patent number 6,320,687 to Ishikawa) disclose dispersion compensators having dispersions discretely variable in accordance with the length of associated fiber segments (Col. 10, lines 55 – 60), and suggest that the transmission line may have different types of segments (Col. 10, lines 47-54). Insofar as the preferred embodiment is a single-mode fiber and the “different types” are identified as including both single-mode fiber and dispersion-shifted fiber, “different types” must be read as referring to a transmission line than includes *both* types of fiber segments. The compensators are disclosed as variously associated with the transmitter, and/or the receiver, and/or the amplifiers.

Kawazawa, et al (U.S. Patent number 5,978,122) disclose an optical fiber transmission line with single-mode fiber segments and dispersion-shifted fiber segments, there being amplifiers between various segments.

Akiba, et al (U.S. Patent number 5,966,228) disclose a fiber transmission line comprising segments of dispersion compensating fiber (DCF) and segments of dispersion shifted fiber (DSF) and amplifiers between various segments and dispersion compensators associated with the amplifiers.


A.H. Gnauck, et al (*Electron. Lett.*) disclose a fiber transmission system comprising a length of single-mode fiber and six spans of dispersion-shifted fiber.



Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Juba whose telephone number is (571) 272-2314. The examiner can normally be reached on Mon.-Fri. 9 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Drew Dunn can be reached on Mon.- Thu., 9 - 5.

The centralized fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for *all* communications.

  
JOHN JUBA, JR.  
PRIMARY EXAMINER  
Art Unit 2872

April 16, 2004